

## ABSTRACT

The present invention is a high-throughput ion beam assisted deposition (IBAD) system and method of utilizing such a system that enables continuous deposition of thin films such as the buffer layers of HTS tapes. The present invention includes a spool-to-spool feed system that translates a metal substrate tape through the IBAD system as the desired buffer layers are deposited atop the translating substrate tape using an e-beam evaporator assisted by an ion beam. The system further includes a control and monitor system to monitor and regulate all necessary system parameters. The present invention facilitates deposition of a high-quality film over a large area of translating substrate.